

What is claimed is:

1. A method for making an anti-microbial filter for a micro-fluidic system, the method comprising the steps of:

- 5 providing a substrate;
 forming a filter membrane of a filter material on the substrate; and
 forming a plurality of holes through the filter membrane by
 providing a filter mask having a plurality of holes therein over the filter membrane by
 depositing a plurality of spacers on the filter material such that a part of each of the spacers contacts
 10 the filter material to define said plurality of recesses and holes in the filter mask, depositing filter
 mask material partially around the spacers and on the filter material such that the part of each of the
 spacers that contacts the surface of the filter material prevents the filter mask material from
 continuously coming between the spacers and the filter material and thereby defines one of the
 plurality of holes in the filter mask, removing the plurality of spacers to form the plurality of recesses
 15 and holes in the filter mask, and
 forming the plurality of holes in the filter membrane in registration with the plurality
 of recesses and holes in the filter mask respectively; and
 removing at least a portion of the substrate to expose at least some of the holes in the filter
 membrane.

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2. The method according to claim 1, wherein the step of forming the filter membrane further comprises the step of:

- diffusing filter material into a predetermined depth of the substrate, wherein the
 predetermined depth of the diffusion of the filter material into the substrate corresponds to a
 25 predetermined thickness of the filter membrane.

3. The method according to claim 1, wherein the step of forming the filter membrane further comprises the step of:

- depositing the filter membrane on the substrate.

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4. The method according to claim 1, wherein the step of forming the plurality of holes in the filter membrane comprises the steps of:

providing a filter mask having a plurality of recesses therein over the filter membrane; and
forming the plurality of holes in the filter membrane in registration with the plurality of holes
in the filter mask.

5 5. The method according to claim 1, wherein the step of removing the plurality of spacers
further comprises the step of:
dissolving the plurality of spacers.

6. The method according to claim 1, wherein the step of removing the plurality of spacers
10 further comprises the step of:
disintegrating the plurality of spacers.

7. The method according to claim 1, wherein the step of forming the plurality of holes in the
filter membrane comprises the step of:
15 etching the filter membrane through the recesses in filter mask.

8. The method according to claim 1 comprising the step of:
depositing an anti-microbial coating between the holes on the filter membrane.

20 9. The method according to claim 9 wherein the anti-microbial coating contains silver.

10. The method according to claim 4, wherein the plurality of holes in the filter membrane are
formed by etching the filter membrane through the recesses in filter mask.

25 11. The method according to claim 10, wherein the etching step includes reactive ion etching.

12 An anti-microbial filter adapted for a micro-fluidic system comprising:
a filter membrane formed of a silicon-based material and having a plurality of holes formed
therethrough.

30 13. The anti-microbial filter according to claim 12 further comprising:
a silicon support structure connected to the filter membrane and extending from the filter
membrane.

14. The anti-microbial filter according to claim 26 further comprising:
an anti-microbial coating disposed between the holes on the filter membrane.
15. A method for making an anti-microbial filter for a micro-fluidic system, the method
5 comprising the steps of:
providing a substrate;
forming a filter membrane of a filter material on the substrate;
forming a plurality of holes in the filter membrane; and
removing at least a portion of the substrate to expose the plurality of holes in the filter
10 membrane.